

## BACKGROUND OF THE INVENTION

The present invention relates to the field of telecommunications. More particularly, the present invention relates to a method and a system for charging telecommunications services to a calling account.

Conventional calling cards, whether periodically billed or prepaid, provide the same service to each cardholder of a particular card, that is, each cardholder of a particular calling card receives the same type of service that other cardholders of the same card receive. If a particular calling card is for long distance service, all cardholders of that card receive only long distance toll service. If a cardholder makes a long distance call originating from a cellular phone, only the long distance charges will be charged to the calling card account. Any charges associated with air time for the cellular service is billed to the subscriber of the equipment from which the call originates.

What is needed is a way to record charges for services used by a calling card user, whether the calling card is periodically billed or prepaid, so that charges for actual services used by the cardholder accrue against the calling card account.

The present invention provides a method and a system for recording charges for services used by a calling card user in real time so that charges for actual services used by the cardholder accrue against the calling card account. The advantages of the present invention are provided by a method and a system for accumulating charges for telecommunications services used during a calling card call, whether the calling card is periodically billed or prepaid. According to the invention, call detail information, such as a user identification, a beginning time of the call, and setup parameters of the call, is received for a calling-card call. Services rate information is received for telecommunications services used during the calling-card call. A depletion rate of an available funds account associated with the calling-card call is then determined in real time, and the available funds account is depleted at the determined depletion rate during the calling-card call, also in real time. Preferably, the services rate information can include information about a calling plan to which a caller of the calling-card call subscribes, long distance toll rate information, cellular-type service air time rate information, and service rates for Internet provider services.

The present invention is illustrated by way of example and not limitation in the accompanying figures in which like reference numerals indicate similar elements and in which:

FIG. 1 shows a block diagram of a telecommunications system that utilizes a calling card according to the present invention; and

FIG. 2 is a schematic block diagram showing details of billing system according to the present invention.

The present invention provides a method and a system for recording charges for services used by a calling card user,

whether the calling card is periodically billed or prepaid, in real time so that charges for actual services used by the cardholder accrue against the calling card account. That is, the present invention provides a method and a system using a universal-type calling card account for accruing charges for telecommunications services in real time, regardless of the particular type of service used, and regardless of the type of calling card used. That is, the present invention is applicable for calling cards that are periodically billed, such as each month, prepaid calling cards and virtual calling card accounts that are periodically billed or are prepaid. A virtual calling card account is a calling transaction account in which no physical card has been issued, but a subscriber can be readily identified with an account by either association in a well-known manner with, for example, call set up information, a personal identification number (PIN) and/or an electronic identification number (EIN). Further, the present invention can be customized for each cardholder so that specific calling plans subscribed to by a cardholder are accounted for as charges accrue against the calling card account.

FIG. 1 shows a block diagram of a telecommunications system 10 in which a network carrier 11 provides access to telecommunications services, such as standard voice services via standard phones 12 and 13, and pay phone 14, international voice service 15, cellular service 16, packet telephone service 17 and Internet service 18. Standard voice services provided by network carrier 11, such as plain old telephone service (POTS), long distance services, voice-messaging services, "toll-free" 800 services, and "900" services, are accessed either through a Local Exchange Carrier (LEC) in a well-known manner, or by direct connection to network carrier 11.

Network carrier 11 includes a billing system 20, an individual billing database 21 and a service type database 22. Billing system 20 receives and accumulates billing information from the different platforms providing the different services offered by network 11 for generating service detail records in real time for each calling card account. "Real time", as used herein, means simultaneous with an occurrence of a telecommunications service transaction that incurs a charge, or within a relatively short period of time after the occurrence of a service transaction incurring a charge.

Individual billing database 21 stores rate information regarding billing plans each network subscriber subscribes to, such as calling plans, SDN, etc, whether the subscriber is an individual or a business. Service type database 22 stores rate information for services that can be accessed from network carrier 11 that are provided by service providers other than network carrier 11, such as Internet voice and data services. Billing system 20, individual billing database 21 and service type database 22 are interconnected so that queries between each platform can be performed in a well-known manner. Additionally, billing system 20, individual billing database 21 and service type database 22 can each be distributed platforms located remotely from each other, be separate platforms at a central location, or be integrated into a single platform at a central location.

FIG. 2 is a schematic block diagram showing details of billing system 20. Billing system 20 includes a calling-card validation system 30, a recording and billing processor 31, a service rate database 33 and a call detail records database 34. Calling-card validation system 30 validates calling card accounts in a well-known manner when a user using a calling card account accesses network carrier 11. While FIG. 2 shows calling-card validation system 30 as part of billing